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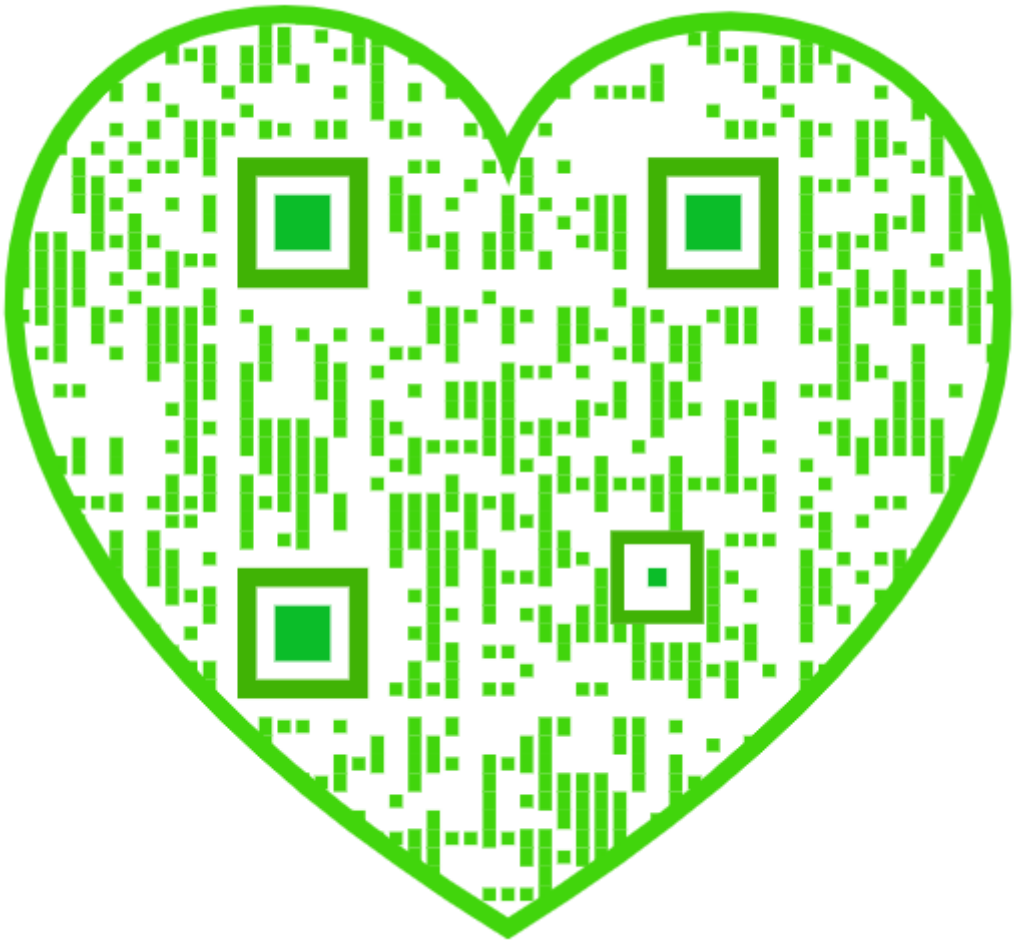

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PREFACE.

THIS handbook—the seventh of the WOODWORKER series—is issued with the object of instructing those who wish to enter the ranks of woodcarvers and to start them on the road to become eventually—if their inclination and aptitude leads them that way—experts in the craft.

When the student has thoroughly mastered the contents of this small manual and practised and carried out the various examples set before him, he should be able to undertake with confidence any ordinary piece of work and be fully able to continue his studies by the aid of advanced models or designs, as well as having a fair idea of the principles which guide the craftsman.

The instructions and illustrations have for the most part appeared in the pages of THE WOODWORKER, and it is the knowledge that some who are now fairly expert carvers were induced to take up the study of the craft by their perusal, which has led to their being issued in book form, after careful revision.

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The exercises are so arranged that the student is taken step by step through the difficulties that arise in the various stages of marking out the design, grounding out, modelling, etc., the text being made clear by many diagrams and photographs.

Among other subjects dealt with are the choice of wood, the sharpening of tools, and the final polishing of the work.

More advanced examples and information will be found in the pages of THE WOODWORKER, to whose columns the reader is referred should any difficulties arise in carrying out the exercises in this course.

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Elementary Woodcarving.

CHAPTER I.

Introductory.

To become an expert woodcarver is essentially a question of time and study. The pupil must have good models of a progressive character from which to study or no progress can be made. To go on repeating the same elementary forms in infinite variety will give facility in handling the tools, but just as a child who never heard speech would remain dumb, so the carver who does not study the works of others will never be able to express freely his own ideas, and according to the quality of his impressions, his expression will be good or otherwise. The ability to draw from nature or models is undoubtedly of great assistance to the carver, as carving is but a development of drawing—drawing in many planes instead of one as on paper; but many who cannot make a passable drawing on paper can yet execute relief work when the design is mechanically set out.

Those who are unable to draw freehand and are aware of their deficiency, may, if they will, overcome it by learning to draw mechanically—measure each

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point on a design with the compasses and copy it bit by bit, never trusting to the eye, but measuring from margin to leaf and leaf to stalk throughout all the pattern. It may be a long process, but it will result in accuracy, and finally, if the method be persevered in, the student will suddenly find that he has acquired a " free " hand, and no small capacity for designing. Orthodox art teachers may not agree with the foregoing instructions, but they are culled from the experience of one who trained many expert carvers and who insisted that an accurate knowledge of form was the basis of all good design.

The wood chosen for carving should always, where possible, be of even and uniform grain, free from knots and strong markings. For beginners a soft wood is advisable, as not only does it require less physical force from hands unaccustomed to the work, but the exercises can be got through more speedily. The freedom with which soft wood can be worked also assists the student to obtain a good style of working, and its liability to damage demands a care and watchfulness throughout, both of the condition of the tools and the methods of working, which are of inestimable value.

The best yellow pine is a splendid wood in this respect and is comparatively cheap. Satin walnut is, however, a favourite wood for early exercises, as it is somewhat firmer than pine and has a better appearance when finished, but it is more liable to twist and warp than most other woods, and is somewhat unsatisfactory for work that is to be made up. Selected straight grained mahogany is harder still,

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but is excellent for the purpose, especially for those who have had some previous experience in working in wood. Oak and walnut and other hard woods are better left alone until the student has made some progress, as they prolong the time required for the preliminary exercises and are more costly.

The exercises to be worked during this course are arranged so that the tools will be brought into use gradually; and the difficulties which invariably occur to the beginner will be dealt with one by one, so that they may be more easily mastered.

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CHAPTER II.

TOOLS, ETC.

THE tools used by woodcarvers are very numerous, and vary considerably in size and shape. There is no complete set or outfit, as the combination of size and curve allow a variety of form which is almost infinite. For a practical carver, however, an assortment of from eighty to one hundred tools will fulfil most requirements; but a good deal of work, especi-

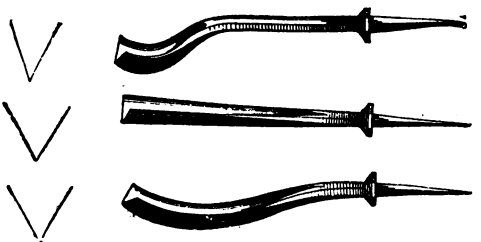

FIG. 1.—TYPES OF V OR PARTING TOOLS.

ally in some styles, can be accomplished with a tenth part of that number, and the beginner—for whom this book is written—would be more hindered than helped by a full outfit. The following list, though not including all the varieties obtainable, will give the student a fair idea of the names and forms of the tools :—

Fig. 1 shows three types of V or parting tools.

The carver's chisel, commonly called a firmer, and the corner firmer or skew chisel are illustrated

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in Fig. 2. These and most other forms of carving tools are made in widths varying from 1-16th in. to 1½ ins. The marks at the left-hand side of the illustrations show the shape of the cutting edges on an enlarged scale.

FIG. 2.—CHISELS OR FIRMERS.

Fig. 3 shows three shapes of straight gouges, the lower one of the three being termed a "fluting" tool, and in the smaller sizes (⅛ in. or under) a "veiner."

In Fig. 4 are shown "curved" gouges, and all the shapes obtainable in straight gouges are obtainable in the curved form, as also in the other forms illustrated. Fig. 5 shows "bent" or "front bent"

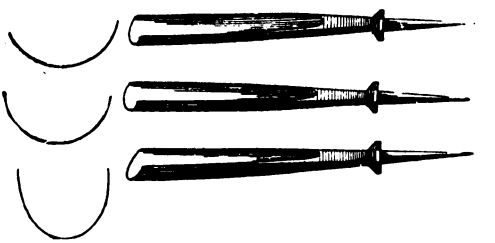

FIG. 3.—STRAIGHT GOUGES.

gouges, while Fig. 6 illustrates the "back bent" variety.

Fig. 7 shows three bent chisels, commonly known as "grounding tools" or "grounders."

A glance at the foregoing illustrations will show

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that the tools have a cutting edge at one end and a sharp point at the other. This latter is called the tang, and is for holding the tool in the handle, into

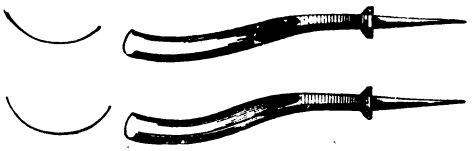

FIG. 4.—CURVED GOUGES.

which it is inserted as far as the shoulder, which also can be seen in the illustrations. (Some tools for light work are made without shoulders.) The

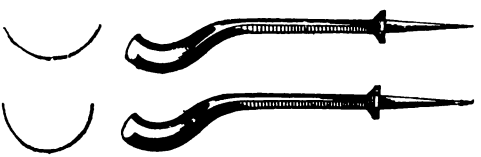

FIG. 5.—"FRONT BENT" GOUGES.

handles are from $3\frac{1}{2}$ ins. to 5 ins. in length and from $\frac{5}{8}$ in. to $1\frac{1}{2}$ ins. in diameter, according to the size of the tool, and are cylindrical, hexagonal, or octagonal

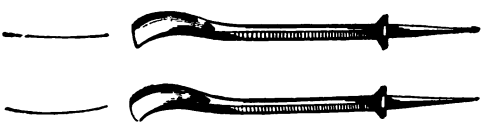

FIG. 6.—"BACK BENT" GOUGES.

in section, sometimes tapering at one or both ends. The best form is the hexagonal or octagonal, as they are not so liable to roll about on the bench as the

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round ones, which have an uncomfortable knack of rolling off the bench and thereby damaging their edges.

The handles are usually fixed by driving them on to the tang of the tool after first boring a hole in

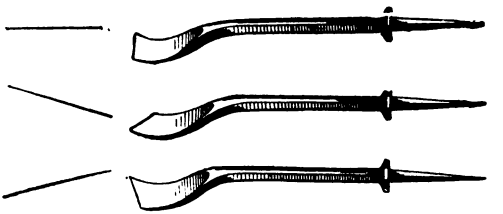

FIG. 7.—BENT CHISELS OR GROUNDING TOOLS.

them, but some carvers prefer to set them in gutta-percha.

The tools, except those sold in sets, are usually supplied (unless otherwise ordered) without handles and not sharpened, but can always be obtained handled and sharpened ready for use. Some very good sets, containing from six to twenty or thirty tools, can now be obtained, and it is a good plan to

FIG. 8.—CARVING TOOL HANDLES.

start with a small set and add others as they are found to be required, and experience will quickly show the student what tools are most required.

The first consideration for the student is to make a suitable selection to commence with.

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For the course of work given hereafter a set of ten tools will be found sufficient, all being "straight" tools except No. 21, the grounding tool. The sizes and shapes are given in Fig. 9 together with the numbers by which they are generally known. The shapes vary somewhat with different makes, and the maker's list should be obtained before purchasing.

It may here be remarked that the set described is not to be looked upon as being in any way complete so far as the number of tools is concerned; that number is suggested as a sufficiently

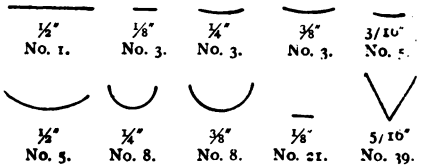

FIG. 9.—A FIRST SET OF WOODCARVING TOOLS.

large and varied set for a beginner, and for most of the work that an ordinary amateur would attempt. It is a good class set, and, as is sufficiently obvious, the line must be drawn at a reasonably limited number for class use. When the student is sufficiently advanced, and feels that he or she has gained the necessary degree of proficiency, then it is advisable to add to the set whatever tools are necessary to properly execute the work in hand. And when intricate designs are being attempted, it will be found that more "grounding" tools are necessary than the one indicated in this set, a smaller one,

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1-16th in. No. 21, and one size larger ¼ in. No. 21 being the most useful.

For sharpening tools it will be necessary to obtain

FIG. 10.—SECTIONS OF OILSTONE SLIPS.

one Washita slip and one Arkansas slip (sections of which are shown in Fig. 10). The latter being a fine-grained stone, is capable of being taken to a thin edge, which is indispensable for the sharpening

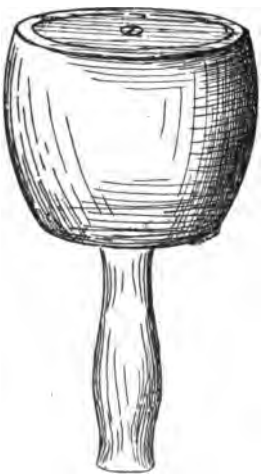

FIG. 11.—A CARVER'S MALLET.

of V-tools and veiners. A strop is also required: this is a leather strap into which has been well rubbed a mixture of tallow and emery powder.

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Its object is to take off the fine "feather edge" often left on tools after leaving the slip.

In addition, a mallet, one pair of cramps, and one or two punches will be required, sketches of which are given respectively in Figs. 11, 12, and 13. The mallet should be a round carver's mallet, the advantage of these being that they always present a similar face to the tool handle. Punches can be obtained, ready made, at the tool dealers; but may

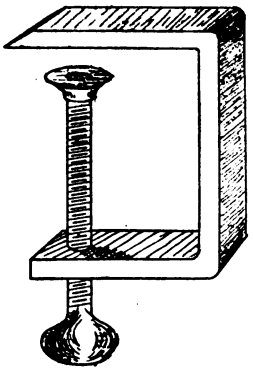

FIG. 12.—CRAMP OR THUMBSCREW.

be made from large wire nails or other suitable material with a three-cornered file. With regard to the cramps, those shown in Fig. 12 are recommended because they are flat and do not interfere with the free work of the hands whilst carving. We would also impress upon students the necessity of a case, or suitable box, to keep the tools from injury.

A substantial bench or table will be required for working at and should be of sufficient height to enable

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the carver to work standing. Fasten the work down at the corner of the bench, when practicable; you can then get round the work much better, and so

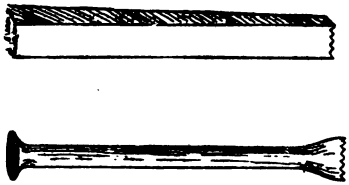

FIG. 13.—PUNCHES.

are able to execute the curves in the designs with greater precision.

There are various ways of fixing the work to the bench. For instance, a panel can be held by three or four ordinary iron door buttons screwed to the bench,

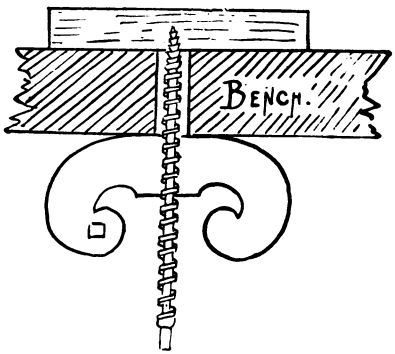

FIG. 14.—BLOCK OF WOOD HELD BY BENCH SCREW.

or pieces of wood can be made to answer the same purpose. The best method is to have a stout piece of wood on which to mount the work, either by

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glueing with paper in between or by screwing and fixing the former to the bench with the bench screw. The screw is passed through a hole in the bench and secured with the nut underneath, as Fig. 14. This arrangement enables the work to be turned round as desired to cope with the variations of the grain and its value cannot be over-estimated. The exercises in the present series can, however, be held while working by a pair of the cramps such as are shown in Fig. 12.

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CHAPTER III.

Transferring Designs.

Before actually commencing to carve, it is necessary that some guiding lines should be placed on the wood. These lines can be either drawn direct or transferred from a design previously drawn on paper, which is usually the better course, and there are several ways of doing this.

The simplest, cleanest, and most expeditious method of transferring designs from paper to wood is by means of carbon paper, which can be purchased from any stationer. This is paper which is coated on one or sometimes on both sides with a greasy preparation of various colours. Two lines should be marked on the design, crossing each other at right angles in the centre, and corresponding lines should be marked on the wood. When the design is on transparent paper it is a comparatively easy task to arrange it so that the four lines coincide, and it is always advisable to make a tracing on transparent paper. (The ordinary paper used for wrapping butter, and obtainable for a few pence per pound is quite serviceable.) With opaque paper it is rather more difficult; but if a pin be placed through the centre and the point inserted in the centre of the wood and a second pin placed near the extremity of one line, the proper position can be found without difficulty. The pattern should then be fastened by

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two or three pins along one side only, and the others removed to allow of the insertion of the carbon paper. It is not necessary to fix the latter, and if the pattern is fixed at one side only it is easy to examine the work as the tracing proceeds for any lines that may have been missed or badly marked. When all has been traced, the pattern should be turned back and a careful examination made to see that all the lines are correct. If the result is satisfactory, the

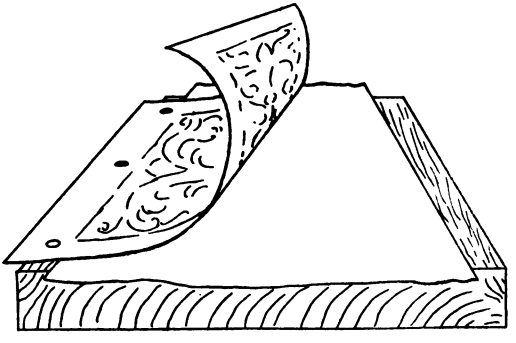

FIG. 15.—DESIGN PINNED TO WOOD WITH CARBON PAPER IN POSITION.

pins may be removed and the carving proceeded with.

Fig. 15 shows the block of wood with the design pinned along one side with the carbon paper in position ready for tracing. The design would be held by the hand when marking over, though additional pins may be inserted if desired.

In the absence of carbon paper the back of the design may be rubbed over with chalk or charcoal,

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according to the colour of the wood to be used, or a lump of burnt sienna or Venetian red; or any dry substance which will leave a deposit on the paper can be used. The pattern is pinned to the wood and marked over as before described, but as the dry pigments will rub off the wood as easily as from the paper, the lines must be gone over again on the wood with a pencil. This second marking is not required in the case of good carbon paper, as the greasy matter on the latter adheres very well to the wood.

The student is strongly urged to practise drawing and to make preliminary drawings before attempting any piece of carving, as this enables a clearer idea of the design to be obtained and conduces to a better execution. In the case of a poor draughtsman it is better, after making one's own studies, to start the actual work with a good outline drawn by another hand. The design can, of course, be pasted on to the wood, as is frequently done by fretworkers; but this proceeding is by no means to be recommended to carvers, as the cutting of the outline, which is the sum total of fretwork, is only the beginning of carving, and the paper obscures the grain of the wood, rendering it a matter of experiment as to which way a particular cut should be made, whereas with the pattern clearly traced the proper direction can be seen at a glance.

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CHAPTER IV.

The Use of the V-Tool.

The first exercise is to be devoted entirely to the use of the V-tool. Its wide range of usefulness, combined with the fact that it is the most difficult of all tools to use, makes it desirable that its use should be mastered early in the course.

It can be used in four different ways, by—

(*a*) using the point only;

(*b*) using one side only;

(*c*) using the point and one side;

(*d*) using the point and both sides.

The block of wood required for the first exercise is 11 ins. by 9 ins. by $\frac{1}{2}$ in. (Fig. 16).

The design can be put on the wood, either by tracing as previously described, or by drawing direct. To set out the pattern, mark first of all the centre lines, AB and CD, and measure all other lines from these. Follow the measurements given in Fig. 16, also the construction lines in the side columns, and draw the curves as shown; make these curves quite full, and avoid having any portion of them flat.

Now for the actual work. To hold the V-tool properly, grasp the handle firmly in the right hand, and hold the blade quite firmly with the fingers of the left hand; apply the tool to the wood, and take

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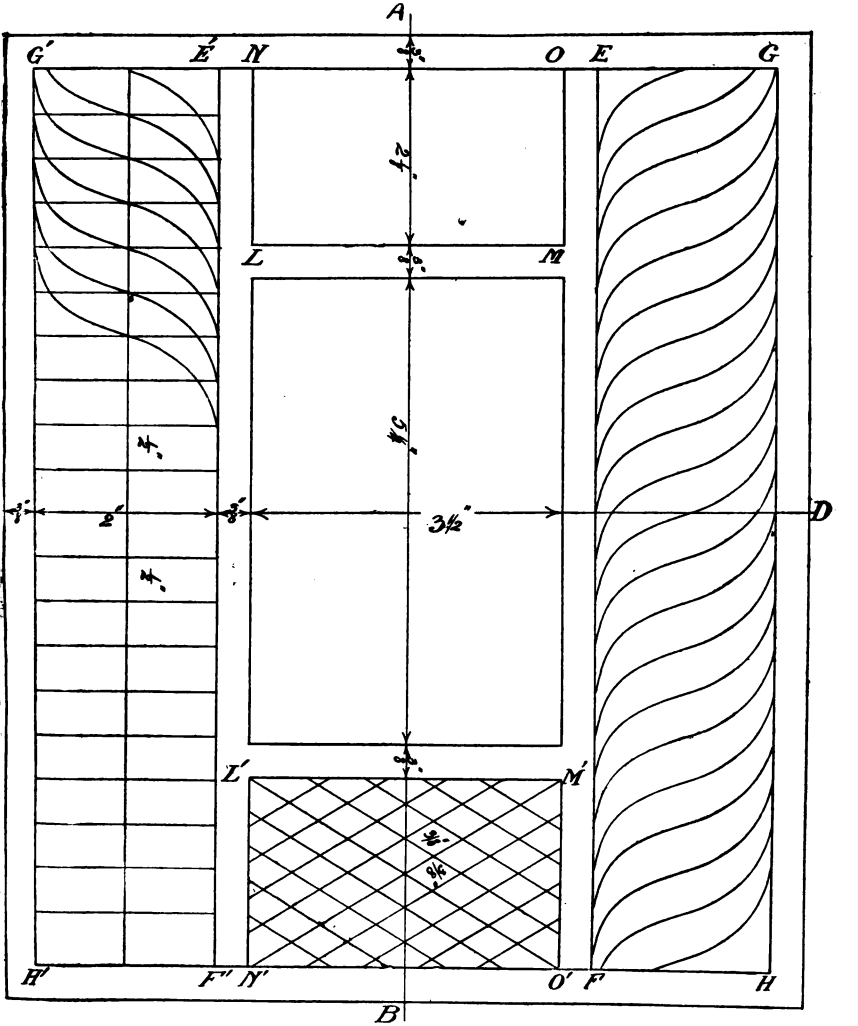

FIG. 16.—PATTERN FOR V-TOOL EXERCISE.

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it to the depth shown in Fig. 17. Observe these rules :—

1. Take that cut which is across the grain first.
2. Make all cuts meet.
3. Keep the point of the tool exactly upon the line.
4. Keep a uniform depth.

In accordance with the first rule the lines GG′ HH′ will be cut first, then the lines LM L′M′. Take care to commence the cut a little distance from the line GH, say ¼ in., so that the back of the tool does not mark the wood outside the line. To make this little bit of the cut the same depth, it will have to be cut

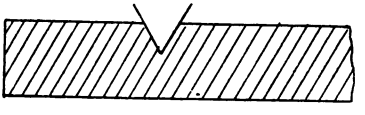

FIG. 17.—SHOWING DEPTH OF CUT.

from the opposite direction. See that the cuts are stopped exactly upon the lines GH G′H′. It will be noticed in cutting *across* the grain that the tool can be stopped anywhere it is desired, and the chip breaks and comes out immediately the tool is stopped, without any tendency to split further on, as it would do if cutting ***with*** the grain. This is why, if we have a choice, the cut across the grain is taken first, in preference to the cut that is with the grain ; it forms a trench " or cut " which prevents any tearing or splitting beyond it, when cutting with the grain. This is a rule that applies throughout the whole field of woodcarving, and if assimilated at this early

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stage, will prevent much splitting of "tender" corners and stalks—especially those which lie across the grain. Take special care that the cuts exactly meet at the corners, and that they are all of the same depth.

After the lines, GH G′H′, EF E′F′ and the four short lines LN L′N′, MO M′O′ have been cut, we can proceed to cut the diagonal lines in the spaces LMNO and L′M′N′O′. In doing so the student will realise still more the necessity for thoroughly understanding the peculiarities of the grain of wood, because it will be found that after the first row of parallel cuts has been made in one direction, and we come to the cuts going in the opposite direction, that one corner of each diamond has been weakened by the first row of cuts, and unless the tool is very sharp, and great care is taken, it will break away. This part of the exercise affords excellent practice in making angles and joining the cuts, and shows very clearly the necessity for clean, careful and accurate work.

Now we come to the curved lines, and in cutting these great care and attention has to be paid to the beginning and the end of the cut, so that when all the cuts have been made the pattern exactly resembles a rope—each strand appearing a point, gradually widening up to the centre, and as gradually diminishing until it disappears as a point. To begin the cut have the tool quite parallel to the lines GH G′H′, then follow the curve round, leaning the tool neither to one side nor the other, until the tool is quite parallel again to its first position.

It will be noticed that the foregoing cuts have been

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all of one kind; that is, they have all been done with the point and both sides of the V-tool, and the exercise has been, so far, one giving practice in outlining. Now we shall put the V-tool to quite a different use. It will be seen that to make the pattern assume the appearance of a rope, the visible portion of the strands should be rounded. This can be done

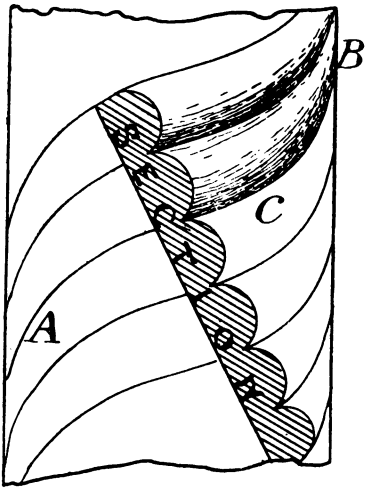

FIG. 18.—PORTION OF EXERCISE WITH SECTION.

by using the side of the tool only. Fig. 18 shows a portion of the design, together with a section shewing how it should be finished. Begin with the side of the V-tool at A, and take a regular, even chip off the corner of the "strand" C all the way up to B. Then take off the two corners which have been made; and now practically with three cuts we have taken the half

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of this "strand" to its real proportions; it only remains now to smooth it up. In doing this try to avoid a laboured, lumpy appearance; make the cuts continuous and clean, as if the whole side had been done with one sharp tool at one stroke. Treat all the "strands" upon both sides like this, and the result should be a rope-like appearance which is not at all unpleasing.

This rounding over can of course be done with a chisel if preferred, but as the V will probably be required to improve the line, its use for both purposes saves frequent changing of tools.

In cutting this design, the student will experience a little difficulty with the grain. In the next chapter the grain of wood will be fully dealt with; but for the successful working of this exercise, try by experiment which side of the "strand" cuts the cleanest and presents the smoothest surface; then having found that, cut the other side in the *opposite* direction; and follow this rule throughout; up one side and down the other.

The points emphasised, in this chapter are:—

1. The value and use of the V-tool, showing its value in outlining, and in modelling.
2. The student has been made aware of the grain of the wood.
3. The necessity that exists for *accurate* work.

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CHAPTER V.

The Grain of Wood.

The difficulties attending a state of ignorance of the grain of wood are experienced at the very outset of the woodcarver's career. The fact that wood has a grain is brought to his notice by the continual chipping off of certain corners, and which, until the reason for it is quite understood, is a source of much perplexity and annoyance. These difficulties were experienced in the first exercise with the V-tool, and it is the object of this chapter to give a knowledge of the grain, so that the student will know in which direction to cut to avoid the results stated above.

Fig. 19 gives a sketch of the panel we had for the first exercise; and it will be noticed that the "grain," or fibres of the wood run in the direction of the length of the panel; this is, of course, also in the direction of the growth of the tree.

The term "with the grain" means cutting in the direction of the length of the fibres, as shown in Fig. 19, *a* to *b*. The term "across the grain" means cutting across the direction of the fibres, either at right-angles to or obliquely across them, as at the cuts *c* to *d* and *e* to *f*. In cutting "with the grain," the student will find that the wood is made up of fibres both hard and soft; if the cut be taken quite parallel to the edge of the board,

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and the fibres are not quite parallel, it will be found that the tool alternately cuts a hard and then a soft fibre, as will be felt by the varying resistances encountered. It will also be found that the extra resistance of the hard fibres tends to prevent the tool from continuing in its straight course by pushing it into

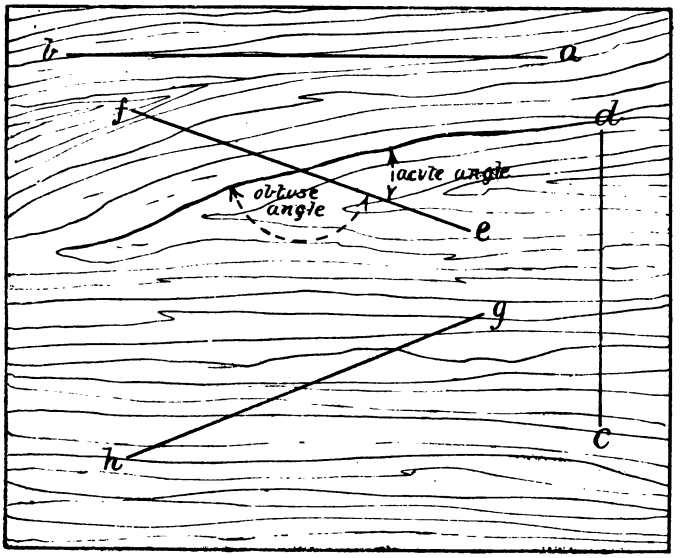

FIG. 19.—WAYS OF CUTTING THE GRAIN.

the softer portion of the wood lying next to it. To prevent this, some little experience is required; keep the tool firmly in the hand, and try to accommodate the pressure to the varying resistance met with in different parts of the cut. Practise on spare pieces of wood as much as possible, until it is felt that some

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command of the tool has been obtained. It will also be found that in cutting "with the grain" the chips will not break off just where required, as they will do when cutting across the grain. The tool has to be worked up to the surface in order to get the chip out.

In cutting "across the grain" the student will find that the tool will cut much more uniformly; it will be easier to get an even cut, and to proceed in a straight line, especially the nearer the cut approaches to a line at right angles to the grain. It will be noticed, too, that wherever the tool is stopped, the resultant chip breaks off also, thus making it possible to cut right up to the line required, and have a cut which is the same depth all the way. When we come to the oblique cut *e* to *f* (Fig. 19) we find a rather different state of affairs. In making this cut with a V-tool (and it should be understood that this has been the only tool used hitherto), it will be found that one side of the cut made is smoother and more shiny than the other, which is often very rough, as though the fibres had been torn out instead of cut with a sharp tool. In the cut *e* to *f*, for instance, the right-hand side of the cut will be smooth and shiny; the left side rough, as if torn. If we take another cut, *g* to *h*, it will be the left side which is smooth and shiny, and the right side which is rough. Now, all this is at first very puzzling to the beginner, and will remain so until the reason for it is thoroughly understood. Fortunately, there are certain rules governing this problem of the grain of wood which can be adopted and which, if adhered to, will enable the woodcarver

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to so arrange his cuts as to always have that side of the cut which is smooth and shiny, *i.e.*, "with the grain," nearest the design, and so have its outline quite clean and sharp.

In closely examining the cuts we have already made, especially those *e* to *f*, *g* to *h*, it will be observed that they bear, in reference to the grain, certain definite relationships which are invariable. If, then, we can find what these relationships are, we have the key to the successful management of the grain of wood. We shall notice that the right-hand side of the cut *e* to *f*—that is, the side which is smooth and shiny—makes with the fibres an acute angle; whilst the left side, which is rough, makes with the same fibres an obtuse angle. Here, then, we have two rules, which, if followed, will enable us to so arrange our cuts that they always leave the outline of the design quite clean and smooth. That side of the cut which is smooth and shiny is "with the grain," and that side which is rough is "against the grain." Again, that side of the cut which makes with the fibres an acute angle is "with the grain," and that side which makes with the same fibres an obtuse angle is "against the grain."

Upon further examination, we find there are other rules to be deduced from the study of this particular cut (Fig. 19, *e* to *f*).

We find that the right-hand side of the V-tool is cutting away from the ends of the fibres, whilst the left-hand side of it is cutting right into the ends of the fibres. We therefore get a third rule—that if the tool is cutting into the ends of the fibres, it is cutting

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" against the grain " ; if it is cutting away from the ends of the fibres, it is cutting " with the grain." A fourth rule can also be seen as operating—that is, with reference to the length of the fibres. If we follow the course of the right-hand side of the tool, we find that it proceeds from a *short* to a *longer* fibre; following the course of the left-hand side of the tool, we find that it proceeds from a *long* to a *shorter* fibre—measuring in both cases from the beginning of the cut. Therefore, in cutting from a *long* to a *shorter* fibre, we are cutting " against the grain " ;

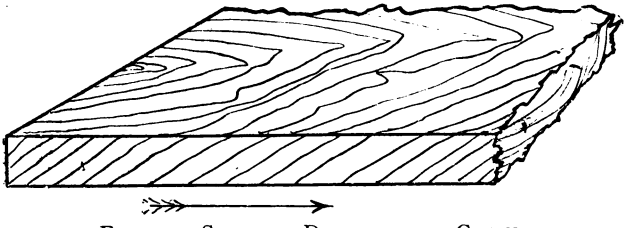

FIG. 20.—SHOWING DIRECTION OF GRAIN.

in cutting from a *short* to a *longer* fibre, we are cutting " with the grain."

We have now obtained, from a study of this one cut, four rules which govern the manipulation of the grain of wood; these rules are invariably true, and can be relied upon in all cases.

There is one other point to notice. It will sometimes be found that the wood splits down in the direction of the depth, when cutting from one end of the board; when cutting from the other end, it cuts quite smoothly and easily. This is due to the way in which the board has been cut from the tree. With

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reference to the direction of the fibres, if a board which cuts in this manner be examined on the edge it will be found that the grain runs in the manner shown in Fig. 20. If this be the case, the design should be so put on that, if possible, the majority of cuts should be in the direction of the arrow.

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CHAPTER VI.

SETTING-IN AND GROUNDING.

HAVING, by practice along the lines laid down in the previous lessons, mastered both the use of the V-tool and the difficulties presented by the grain of the wood, we are now prepared for the next lesson, which will be an exercise introducing two further steps in wood-carving as follows :—(1) Setting in ; (2) Grounding.

The design employed (Fig. 21) is one which is fairly easy, yet introduces the chief difficulties which a beginner would naturally encounter. The design should be first traced upon the panel by the methods mentioned in Chapter III. The wood employed should be 12 ins. by 9 ins. by ½ in. with the grain running in the direction of its length, and the design should be drawn to size accordingly.

The processes involved in this exercise are outlining, setting-in, and grounding.

The object of outlining is that the design itself might be "freed" from the groundwork, and by diminishing the resistance of the wood minimise the risk of splitting portions of the design, knocking corners off, or causing a horizontal splitting of the grain *under the surface* when "setting-in." The reason such splitting occurs, or tends to occur, is that when "setting-in" the tools being of an appreciable thickness, compress the wood in a direction at right angles to the cut (see Fig. 22). In this sketch

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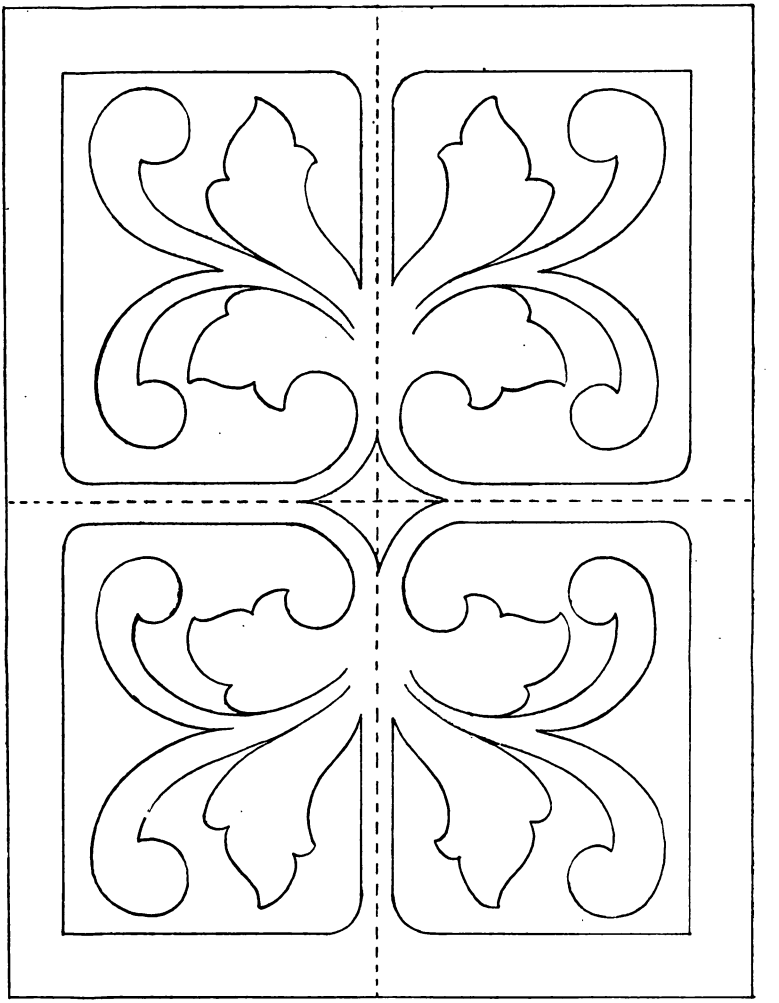

FIG. 21.—DESIGN FOR GROUNDING EXERCISE.

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is represented a portion of a stalk lying in a direction across the grain. Supposing "setting-in" is proceeded with, before or without the "outlining," we shall find that the first cut *a*, *b* will cause (owing to the thickness of the tool), a compression of the grain in the direction of its length, equally either way and each way to the amount of half the thickness of the tool. This, perhaps, does not seem much, but it is quite sufficient to cause a *slight sliding of the grain* at the depth to which the cut has been taken. Now, when we come to the cut marked *c*, *d*, it will be

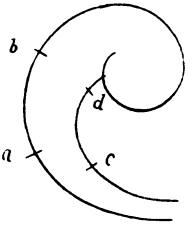

FIG. 22.—DETAIL OF FIG. 21.

found that the amount of compression caused will still be equal to the thickness of the tool; but the pressure will move along the line of the least resistance which, in this case, is across the stalk itself, and it will be found that the sliding of the grain of the stalk has taken such effect that it is loosened down to the depth of the cut. It is this sliding of the grain which we wish to avoid, and it can be avoided by "outlining." Still referring to Fig. 22, if, instead of "setting-in" first, we "outline" the ornament, we shall have so lessened the

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resistance of the groundwork that this sliding of the grain is impossible. "Outlining" consists of making with the V-tool a "trench" all round the design and about $\frac{1}{8}$ in. away from it, and the cut should be taken to about the same depth as it is intended the ground shall ultimately be. This can also be done, and in some cases to more advantage, with a U shaped gouge known as the fluting tool. By making such a trench outside the lines *a*, *b* and *c*, *d* (as shewn in section, Fig. 23), the resistance has been lessened, and, instead of the fibres of the stalk sliding under the surface, it is that portion

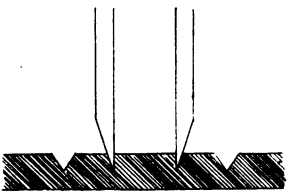

FIG. 23.—SECTION SHOWING TRENCHES IN OUTLINING.

lying between the stalk and the "trench" which gives way. One further advantage obtained by this method of outlining is that for long curves corresponding to *a*, *b*, and *c*, *d* (Fig. 22), a proficient student can eventually, by tilting the V-tool until the side nearest the design is nearly perpendicular and by keeping the tool *close* to the design, do away with a corresponding amount of "setting-in." It is, in fact, possible by a judicious selection or production of the design, to do a great amount of work without any "setting-in" whatever. Of course, along the front of some portions of the design, it is best not to follow

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all the various small curves, but to make one cut right along the front. We are now prepared to commence "setting-in." This consists of taking whatever tool the curve of which fits the particular portion of the design being worked, and, holding it perpendicularly, driving it down into the wood to the depth intended. It is better to "set-in," so that the pencil line of the design is left just visible; this ensures the whole of the design being left after the groundwork has been taken out. There are many things to notice to ensure the perfect success of the "setting-in," and it will, perhaps, be as well to enumerate them now.

1. "Set-in" deep enough.
2. Get all the cuts to meet one another.
3. All the cuts should be of a *uniform* depth.
4. Incline the tool handle so that it is leaning slightly *over* the design.
5. "Set-in" only as far as the outside junctions, *i.e.*, the *outline* of the design only.

The first and second rules are, perhaps, the most important at the outset. The student should not be afraid of using the mallet with some amount of force, because a badly set-in piece of work is productive of much extra and totally unnecessary work when "grounding," to say nothing of the loss of time and injury to the outline of the design; a good clean firm outline cannot be obtained if the "setting-in" is not deep enough. If the cuts do not meet one another, pieces of the design will be taken off when "grounding," in addition to the groundwork. To get all the cuts of a uniform depth is a matter of

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judgment, and only practice and care can bring proficiency in this. The object of inclining the tool so that the handle is leaning over the design, is to avoid undercutting, which weakens the edge and causes it to be liable to break off; and, in addition, when the work is modelled and the edge is lowered, the beauty of the outline is often destroyed. Speaking generally, the inclination should be very little, only so much so as to avoid even a suspicion of under-

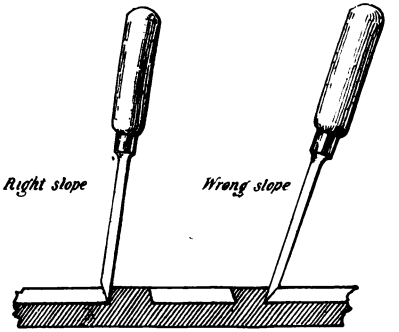

FIG. 24.—SHOWING SETTING-IN ANGLES.

cutting (see Fig. 24, which is exaggerated for purposes of illustration), else the design would be much wider on the groundwork than at the surface of the wood; but occasionally where the stalk or member is very thin, it is advisable to incline the tool more than usual, and cut away afterwards until the member is its proper thickness. Rule 5 means that only the outline of the design should be followed in "setting-in"—no line whatever which is on the the design itself, should be touched at this stage;

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that will come when the modelling is reached; and it might be remarked here that as it is only intended to provide opportunity to get a thorough knowledge of "setting-in" and "grounding" in this exercise, it will be left perfectly flat. Therefore, it is essential that all edges should be firm, continuous, and clean.

In "grounding" certain tools are used to take out the wood around the pattern to a depth to be decided —in this case, about 3-16ths in.

It should be well borne in mind that all the wood to be taken out should be *cut* out, not split or levered out. Quick gouges are the best to use for the first cuts, *e.g.*, the tools ¼ in. No. 8 and ⅜ in. No. 8; then flatter gouges, and, finally, the flattest of all—the ⅛ in. and ⅜ in. No. 3. The No. 3 tools being flat gouges have their corners raised from the ground just enough to avoid digging in, and the groundwork is capable of being made quite level and smooth by these tools. In beginning to take the ground out, take the quick gouges mentioned, and, if possible, cut obliquely across the grain, in such a manner that each succeeding cut is made *with the grain* (see Chapter V on "The Grain of Wood"), taking care not to run the tool into the design and so spoil its edge. Then when the wood has been "wasted" away in this manner, take the flatter gouges and gradually smooth the ground until all the ridges have been taken off; but first be quite certain that it has been taken to a *uniform depth.* This is of much more importance than to have it merely smooth. It is here that the importance of Rules 1, 2, and 3

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referring to "setting-in" is apparent; and if the rules laid down are followed, and the student allows himself or herself plenty of time, there is no reason why a success should not be made of this exercise. After all the groundwork is taken out quite level and smoothly, the leaves and scrolls may be parted with the V-tool.

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CHAPTER VII.

MODELLING.

IN the exercise the design for which is given in Fig. 25, the principle of "modelling" is introduced. In the previous exercises the shaping of the surface has been confined to simple V-tool work; now we shall begin to model in earnest. It is supposed that the student has made sufficient progress (by means of practice, without which no real progress can be made) to enable him to prepare the present exercise up to the stage at which it will be ready for the "modelling." That is, the design, drawn to the same size as the previous exercise, will be fixed by means of the centre and margin lines, as described in Chapter III, traced, outlined, set-in, and grounded; the depth of the groundwork to be in this case $\frac{1}{4}$ in.

If all the previous instructions have been skilfully carried out, the design itself will appear as a clean-cut figure, with sharp edges, upright "walls" (slightly wider at the base), and true, even curves standing sharp and clear upon a uniformly level and smoothly finished ground. It, however, often happens that the "setting-in" has not been perfectly done; the succeeding cuts have been not made carefully continuous with their predecessors, an effect being obtained as B Fig. 26; A is the ideal—B is very often the real cut. In order to avoid this result, the corner of the tool should be placed just in the preceding

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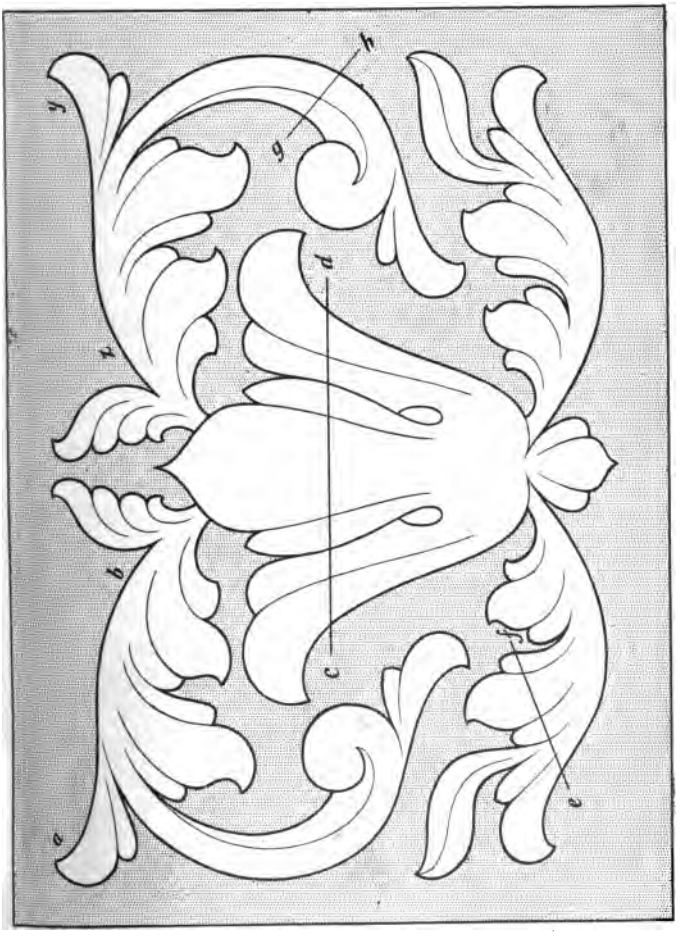

FIG. 25.—EXERCISE IN MODELLING.

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cut, overlapping it about 1-16th in. or $\frac{1}{8}$ in.; this ensures both a continuous line through all the cuts meeting one another. But if this result at B has already been obtained it can be rectified by—in the case of the longer curves, *e.g.*, *a* to *b* Fig. 25—the use of the V-tool. Hold it so that the side of it which is nearest the design is nearly perpendicular, and then shave off the irregularities with it; at the same time the point of the tool will sharpen the angle or corner made by the "wall" of the design with the ground-work.

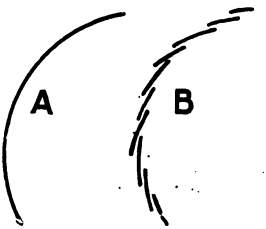

FIG. 26.—REGULAR AND IRREGULAR SETTING-IN.

In the case of the smaller cuts and quicker curves, they must be trimmed with the tools which most nearly fit their curves.

Modelling is the name given to that process which is employed in giving to the design a resemblance to the natural or artificial forms upon which it is based.

The first thing to call attention to is the necessity that exists for thoroughly understanding the design. Many failures to rightly interpret the design in the process of "modelling" can be put down to the

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fact that students are apt to be too eager to begin to "carve" to think it worth while to spend a few minutes' thought over the design. It is much better to think out the meaning and intention of it before taking as much as a single chip off. More real progress is made in this way than is often imagined.

In this particular design, leaves and scrolls are shown proceeding from a central flower; the upper leaves and scrolls proceed from the inside of the flower, and the lower leaves from under it. It is thus obvious that at that point where the leaves join the flower they will have to be made slightly lower; about half the depth of the groundwork is a safe depth to take them. This, then, is the second thing necessary.

Sink all parts of the design which require sinking.

A further glance shows us that the leaves and flower consist of various parts complete in themselves; for instance, each of the top leaves consists of four portions or elements, each of which could be used separately or in other combinations. Each of these requires separating or parting one from the other with the V-tool; and in doing so take care that the cut made is of a good *full* curve, is well graduated as regards depth, and is continuous; remember to take quick short strokes with the V-tool, lifting it clean off the work at the end of each stroke. Thus we arrive at the third step in the modelling.

Part all members, or parts of members, from each other.

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All the outside or back edges of the leaves and flowers to be rounded off down to the ground.

In order to round these off, take the tool ⅜ in. No. 3, and, back downwards, beginning at, say, the point marked Y on the design, take chips off evenly down to the point marked Z, in such a manner that the section of the leaf will be as shown in A (Fig. 27); then further continuous cuts to take off the corners made by this cut, and with a little "cleaning off" the rounded edge is complete, as at B. Each separate cut should be taken down continuously, so as to produce a regular, uniform surface. Any

FIG. 27.—SECTION OF PORTION OF FIG. 25.

attempt to round off about an inch or so of the edge, and then other succeeding portions, and so do it little by little, is quite wrong; the method described is much quicker and more effective. In rounding these edges—and, in fact, throughout the whole of the work—care should be taken that the cuts are always *with the grain*; it may occasionally happen that a few small cuts have to be made against it, but only a very small proportion have to be so made. The student who has not made a sufficiently close study of the rules respecting the grain of the wood will find his work appearing rough on the surface—the points of the leaves will chip off, and so on.

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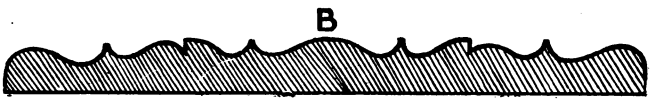
Having now got the design sunk, parted, and the backs of the leaves and flower rounded, the surface can be treated. Beginning with the flower we must keep two important considerations in mind—those of strength and grace. The modelling has to be such as will give an appearance of strength with the least amount of material, and has to be graceful in its proportions and curves. To effect this, gouge cuts are made on either side of a line drawn from the junctions (other than where the parting cuts are taken

SECTION SHOWING GOUGE CUTS.



SECTION SHOWING RIDGES FLATTED OFF.

FIG. 28.—SECTIONS OF FLOWER IN FIG. 25.

from) towards the springing point of the member. These cuts are graduated from the surface at the beginning of the cut to about half or three-quarters the depth of the groundwork at the end of it. The result of such cutting is that a *ridge* is formed apparently springing from the source of the member, and ending in the junction spoken of. The section of the flower shown in A, Fig. 28, illustrates the effect of this treatment.

The curves of the ridges must be good, continuous, true, and unwavering, and the ridges themselves must

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exactly meet the junction. The gouge cuts will vary in width as the width of the member varies, but only within the limit set by considerations of proportion.

The leaves are treated in a similar way; each

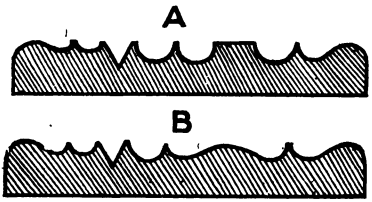

FIG. 29.—SECTIONS OF LEAVES IN FIG. 25.

separate member, or portion of a member, having ridges proceeding from each junction made by means of gouge cuts on either side. (See Fig. 29 for section *a* of leaves as treated up to now; the section of the scroll is also shown in Fig. 30). The next step is to flatten off the ridges not required. It will be easily seen that in making two gouge cuts we make three ridges—one on either side, and one in the middle; it is the middle one coming up to the junction which

FIG. 30.—SECTION OF SCROLL IN FIG. 25.

we wish to be kept; the other two require to be flattened off until the hollow glides quite imperceptibly into the convex surface. The effect produced is shown in section B in Figs. 28 and 29.

Again, the necessity for understanding the grain of

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FIG. 31.—PHOTOGRAPH OF FINISHED PANEL.

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the wood arises in the cutting of the hollows and ridges and in flattening off.

All adjoining cuts (as in making the ridges) should be so made that the last cut on that side of it where the wood is the weakest is cutting with the grain—*e.g.*, in the flower, and on its left-hand petal, the cut nearest the centre petal will be taken first, and the cut nearest the outside, last; because the right-hand side of this last cut will be cutting with the grain on that side nearer the ridge; and this is where the wood will be the weakest, and, therefore, the most liable to break away.

Fig. 31 is from a photograph of the carved panel, the design for which is given in outline in Fig. 25. It shows very clearly the many points which have to be observed and carefully attended to when engaged upon such work as this, and will enable the student to follow intelligently the instructions given.

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CHAPTER VIII.

Further Steps in Modelling.

The design to be used in this lesson is shown at Fig. 32 in outline, and Fig. 33 is a photographic reproduction of a panel carved therefrom which shows very clearly the result of following the instructions given. It is more intricate than the preceding one, requiring greater care in the grounding out progress; and, it will be noticed, has a certain amount of interlacement and overlaying; these latter both requiring careful treatment. It is also more varied in character, introducing several new elements of design—notably the flowers and calices. It should be understood that these elements, used in renaissance ornament, are more or less artificial in character and are not necessarily based upon any particular form of plant life. Nevertheless, they embody various principles inherent to plant form, such as growth, radiation, and proportion, and show also an approximation to life; but although they were based upon natural forms originally, they have been conventionalized quite out of recognition; they are, in fact, the appearances of leaves attached to, or built around, certain principal lines. Nevertheless, they can be carved in such a manner as to give life to the apparently lifeless, and be made to express strength and grace and vigour.

To begin this exercise, use the V-tool as before in

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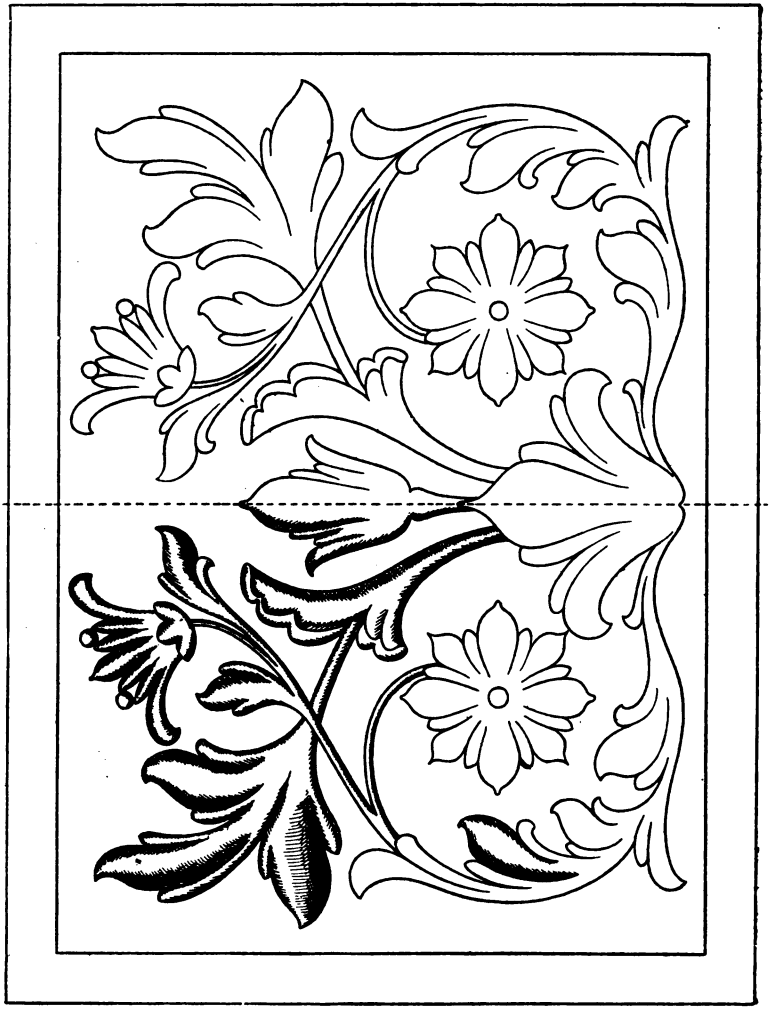

FIG. 32.—DESIGN FOR LESSON IV.

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outlining, so as to get the design quite freed from the groundwork, the members being arranged in much closer positions. The V-tool must be used much more carefully in this exercise than in the preceding ones, and the fluting tool can be used with advantage in the smaller spaces where it is difficult to turn the V: there are more thin stalks and a much larger number of corners and points, besides a less amount of ground space. Because of the closer arrangement of the elements of the design, the number of enclosed spaces is greater and they are smaller in size, and here the bent grounding tool ($\frac{1}{8}$ in. No. 21) will be of service, the bend in the blade causing that part of the tool which lies beyond it to be lifted quite clear of any part of the design. It might here be noted that many failures to use this tool well and to the greatest advantage, are caused by not holding the handle of the tool high enough.

In "setting-in" take great care with the thinner portions of the design—the stalks, for instance—especially where they are proceeding *across* the grain. The "outlining" should be the full depth in cases like this, and should be taken quite near to the member, so that the distance from it to the trench is *less* than its own thickness. The depth of the ground should be 3-16ths in. Having taken all the ground out, and having got the design standing out clean and sharp, and all the curves good and true, attention can be directed to the modelling. The procedure will be similar to that adopted for lesson III. The leaves, foliage, and flowers that have been introduced have their parts arranged so that they can

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FIG. 33.—PANEL CARVED FROM DESIGN FOR LESSON IV.

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be treated on the same general plan; but other principles are introduced that give life to the carving.

Variety should be introduced into every part of the design. The leaves, instead of being looked upon as being masses of wood which have to be scored with a few lines or cuts, "to break the surface" (as it is very often put), should be made to curl and twist within the limits imposed by the depth of the ground, and the requirements demanded by the general aspect of the design; interpreting Nature's principles as far as it is possible to do so in wood.

Variety should exist in the length and breadth and thickness of the members; and should always conform to the law of growth. That is, the members of the design should be made to swell out just at that place where natural forms do, and should taper away in the same manner. For instance, in the design we are now doing, take as an example the leaf in the lower part of the design. At its commencement, proceeding from under the central husk, it should be thin and low, gradually swelling out to its fullest width and thickness about the middle, and then tapering away towards the end, almost down to the ground again.

Fig. 34 gives a longitudinal section shewing to a certain extent what is meant by varying the surface. The stalks of the flowers being thin should at the same time be low, whilst in contrast to them the flower should be quite full and round. In the flowers also the law of variety obtains; certain portions should stand out more distinctly than others in order to give character. For instance, the flowers in the lower portion, which are lying so that we can see the

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full face of them, require treating so that the *centres* of the petals stand out more distinctly than the rest in order to give them body or fulness.

The leaves in the upper portion which are lying flat should be made to twist by lowering opposite corners, and many good effects can be obtained by varying the surface of these leaves in respect of their length. There is no invariable rule which dictates just what should be done to produce the best effect, except that of individual judgment; and how far this possesses any value depends upon the development

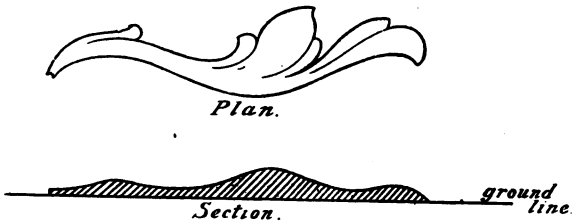

FIG. 34.—PART OF FIG. 32, SHOWING VARYING RELIEF.

of the student's artistic perceptions, which can only be brought about by exercising the powers of observation, discrimination, and comparison.

The object of varying the surface and shape of the elements composing the design, is to afford the contrast necessary to obtain the desired result. Certain parts, such as the flowers and portions of the leaves, should be more prominent than other parts.

Each separate portion of the design should be treated with reference to the part it will play, *in harmony with all the other parts*, in producing the

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greatest effect ; and this consideration always modifies any general scheme of treatment adopted, and helps to save the work from mere mechanical monotony. As a rule the centres of leaves and petals should be as full as possible, in order to avoid any appearance of thinness or attenuation ; so that in making the gouge cuts, keep them well up to the ridges, and usually, if one side of a leaf has to be left high, the other side should be lowered—elevation and depression should follow one another alternately; but if this plan were to be strictly carried out monotony would prevail. As before remarked, any general principle is always modified by the action of other equally important principles, and the final result always depends upon the concentrated application of all of them.

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CHAPTER IX.

Treatment of the Ground.

In this chapter the treatment of the ground will have special attention. It is by no means the least important part of woodcarving, although it receives in many cases very little attention—not, in fact, anything near the attention it deserves. Beginners are too ready to rely upon the punch in covering up untidy and uneven work. This is, perhaps, very natural, as it needs a certain amount of proficiency in cutting to make the ground fulfil the conditions necessary, which conditions have already been described in the chapter upon setting-in and grounding. It might, however, be mentioned here briefly that, as far as the actual work or craftsmanship is concerned, the two following conditions are generally necessary :—

(1) The ground should be uniformly *level.*

(2) It should be uniformly *smooth.*

It is much easier to write this than it is to do it, and only by constant and conscientious practice can proficiency be attained. Especially is it most difficult to get the ground to fulfil the above conditions when the design is a close one, in which the various elements are placed close together, crossing and overlapping one another, and so making many enclosed spaces. The design given in Fig. 32 is an example of this kind, and if combined with a cross-grained piece of wood or a piece in which the grain has a decided " dip "

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in one direction, it is a difficult matter to get the ground either uniformly level or uniformly smooth, as in such a case as this it would not be possible to be always cutting in the one direction, which the grain of the wood would demand, in order to ensure the smoothness necessary to a perfect ground. It

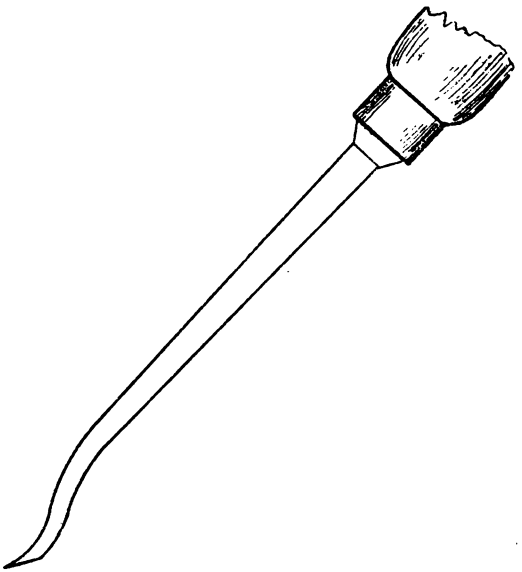

FIG. 35.—SIDE VIEW OF GROUNDING TOOL, SHOWING ANGLE AT WHICH IT SHOULD BE HELD.

is in cases like this that the grounding tool, which in our set of ten tools is marked $\frac{1}{8}$ in. No. 21 (see Chapter II) is most useful.

To use the "grounding" tool properly, hold the handle (grasped firmly in the right hand) at such a

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height that the edge of the tool *cuts* the wood. Having once got a "hold" of the wood, *carry* rather than *push* the tool along. The most common tendency is to lower the right hand as the forward movement proceeds, thus levering the cutting edge away from the surface of the wood. Therefore, always keep the right hand at the same level when using the grounding tool.

In enclosed spaces it is often the case that the ground is taken to a lower depth than in spaces which are more open. This is because the wood is *split*

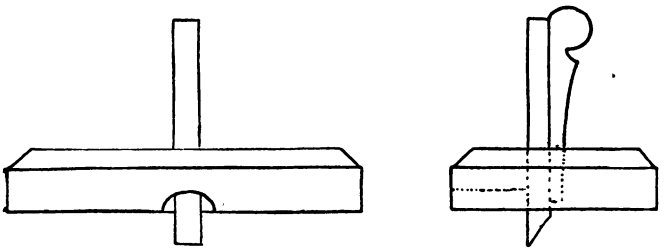

FIG. 36.—FRONT AND END VIEWS OF ROUTER.

away instead of being cut by the tool. Therefore, always *cut every chip away*; do not *split, lever or tear away any portion*; this latter only makes bad work and slip-shod methods much easier.

A tool that is very useful though not essential in grounding is the router, of which front and end views are shown in Fig. 36. It is easily made, and may consist of the broken blade of a chisel, inserted through a suitable hole in a flat piece of hardwood and fastened with a wedge; or a blade can be cut from a piece of sheet steel, such as a scraper or

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broken saw. Any size blade from 1-16th in. to ⅜ in. or ½ in. may be used, although a 3-16ths in. or ¼ in. will, perhaps, be found of the most value.

In making a router, see that the piece of wood, or body, is of a fair thickness to give sufficient holding surface to the wedge; and take care that the hole for the wedge, and the wedge itself, is *tapered only slightly*. The severe nature of the work the router has to do entails a great strain upon the wedge and blade, which would work loose if too great a taper be given to the wedge. The body of the router should be of a sufficient length to span any wide stretch of ground that might occur, and of sufficient width to prevent it being kicked over when it encounters too great a resistance. About 4 ins. by 1 in. by ¾ in. is a good size for ordinary work, but it is sometimes useful to have both smaller and larger sizes.

The manner of its use is as follows:—Outline as usual, and waste away the ground with quick gouges as previously described. Grasp the router firmly with both hands and work it quickly backwards and forwards, having first "set" the blade to the depth of ground required; the result will be that the wood is rapidly cut or scraped away to a very even, uniform depth.

Now a few words as to the depth of the ground. This must be decided, principally, by the design. If it consists of big masses, which have been designed with the special intention of producing a specific effect in light and shade, then the depth should be comparatively great; and if the elements used are

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small, having been designed with the intention of giving a gentle play of light and shade, the relief need only be low.

It is a very common mistake to suppose that the higher in relief the carving is the better is the effect; the question of the depth of the ground depends almost entirely upon the design used. With some designs it is simply labour thrown away taking the ground to a great depth; a much better effect could be obtained by having it half the depth.

In any case, whatever depth may be decided upon, *always make full use of it.* The value of sinking the ground to any depth at all lies in the use we make of it in twisting the leaves, lowering certain parts so that others can stand out in greater contrast, bending, raising, and lowering the elements so as to give that variety of surface which gives life and character to the carving.

But it is not necessary to sink designs such as are used for lessons III and IV to a greater depth than 3-16ths in.; and it may be stated that the ideal at which to aim is to give the same effect and character to any design of a similar nature, even if it be sunk only to a depth of 1-16th in. This needs great practice, both of thought, judgment, and dexterity, and it will afford the very best exercise to the student to carve the designs used in Chapters VI and VII to the depth of only 1-16th in., and see how far success can be attained in getting the *same appearance* of depth and relief, the same character expressed in the turning and twisting of the leaves, and in the balance of parts, and the

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same dexterity of cut both on the surface and in the outline. It will, in this case, be necessary to use flatter tools in modelling the surface, and, of course, much greater care must be taken in cutting; but the value of such an exercise in training the judgment, and educating the sense of light and shade and balance of parts, is very great and cannot be overestimated.

Punching the ground has not yet been described. It was intended that the groundwork of the two designs already attempted should have had such care taken over them that they would be quite level and smooth enough to dispense with the punch. But this is perhaps expecting too much from beginners; yet there is this excuse, or rather reason, for not introducing the use of the punch too early—that the knowledge that it can be used to cover up a multitude of deficiencies makes the beginner not so careful as he or she ought to be in getting the ground as good as it should be. The ideal at which to aim is, that the ground should be as level and smooth as the original planed surface of the wood.

It does not by any means follow, however, that because the ground has been worked level and smooth it does not therefore require punching, or treating in some way, so as to afford a better contrast to the carving. The reasons for using the punch rest upon quite another basis, this basis being the requirements suggested by our artistic sense and judgment.

With many carvings, especially those which have large members or elements used in their composition,

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there is almost an equal reflection of light from both the design and the ground, especially when the work has been well cut. This being so, the design cannot stand out with that clearness and sharpness that is required to produce the effect intended; therefore, it becomes a matter of necessity that the ground should be treated in some way, to readily enable the eye to distinguish clearly between the design and the ground. This is the real reason why the punch is used; it breaks up the ground, and by so doing scatters the light reflected from its surface, so that comparatively few rays reach the eye, and, consequently, the ground assumes a dark and more subdued tone, against which the design stands clearly and distinctly.

Therefore, always judge the work upon its merits, and decide upon the above basis whether the ground requires punching or not. But do not let any consideration of punching the ground control in any way the quality of the work: always take the ground out as if it was not to be punched. Only by rigidly adhering to this rule at the commencement can the student avoid falling into slipshod and untidy methods of work.

The use of the punch is to provide a contrast sufficient to give the carving the necessary relief or clearness, and it is enough to say that the punch, therefore, only can be legitimately used if, in the opinion of the student, it is necessary to give clearness and the requisite amount of contrast to the carving.

Punches are of various kinds; a study of tool dealers'

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lists will reveal about twenty different patterns. Some have one point, others four, eight, and sixteen ; some are square, others triangular, whilst others are more elaborate in design, representing roses, acorns, stars, crosses, circles, &c. Those most used by the woodcarver are shown in Fig. 13 and vary in the number of their points from 3 or 4 to 15 or 20. It is necessary that the punch should *part* the fibres,

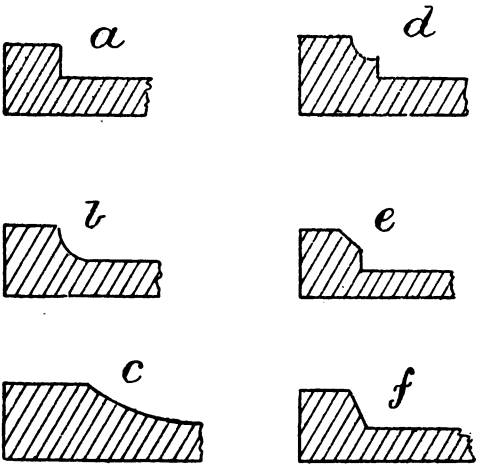

FIG. 37.—VARIOUS FORMS OF MARGIN.

not *bruise* them ; and if the punch be too big, the latter result often follows. Vary the position of the punch so as to get a homogeneous effect ; do not try to get the punch marks in the same straight line. Always do the punching carefully ; slovenliness and carelessness can no more be excused at this stage than in modelling.

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Do not go over the same portion of the ground twice with the punch, or the ground gets cut up too much, and the effect produced is very uneven and streaky.

In Fig. 37 are shown sections of various methods which can be employed in cutting the margins of the ground. That at *a* is most commonly employed; the one shown at *b* is very effective, and can be varied in curve according to the curve of the gouge used in cutting it; it can be shaped as at *c*, showing a very gradual incline from the surface to the full depth, and is very useful for stiles of doors or other narrow pieces of framework which require ornamenting with carving, and where the margin must be very near the outside edge of the wood. Those shown at *d* and *e* are very useful for carvings that have to be sunk to a comparatively great depth, and in which the margin, being $\frac{1}{2}$ in. or $\frac{3}{4}$ in. in depth, would appear to be too much in evidence. These require careful treatment at the angles. The section shown at *f* illustrates an alternative mode of treatment which is sometimes useful.

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CHAPTER X.

Advanced Work.

Fig. 38 gives the outline of a more advanced exercise (of which a photograph is shown in Fig. 41) designed to carry the student a step further in the art of modelling the surface, and Figs. 39 and 40 are diagrams explaining the processes by which the desired light and shade are obtained.

In modelling the element shown in Fig. 39 the same treatment is adopted as in the last exercise; that is, gouge cuts are made on the surface in such a manner that ridges are made proceeding from each junction, as shown by the lines on the surface and the sections given in Fig. 39.

It is better, if we have a choice, to begin at the *end* of this element, so avoiding, as far as possible, any splitting off at the ends.

In treating the twisting of the leaves use a quick gouge, either a $\frac{1}{4}$ in. No. 8 or $\frac{3}{8}$ in. No. 8. Begin at the surface and cut downward as shown in Fig. 40, beginning at the point *a* and cutting in the direction of the arrow, twisting the tool from right to left. This treatment keeps the edges firm and continuous, much more so than if the line from *a* to *b* had been "set in" and the chips taken out, leaving a square corner. The sections of this part of the member are shown in Fig. 40. Take particular notice in cutting one member to pass under another, that the

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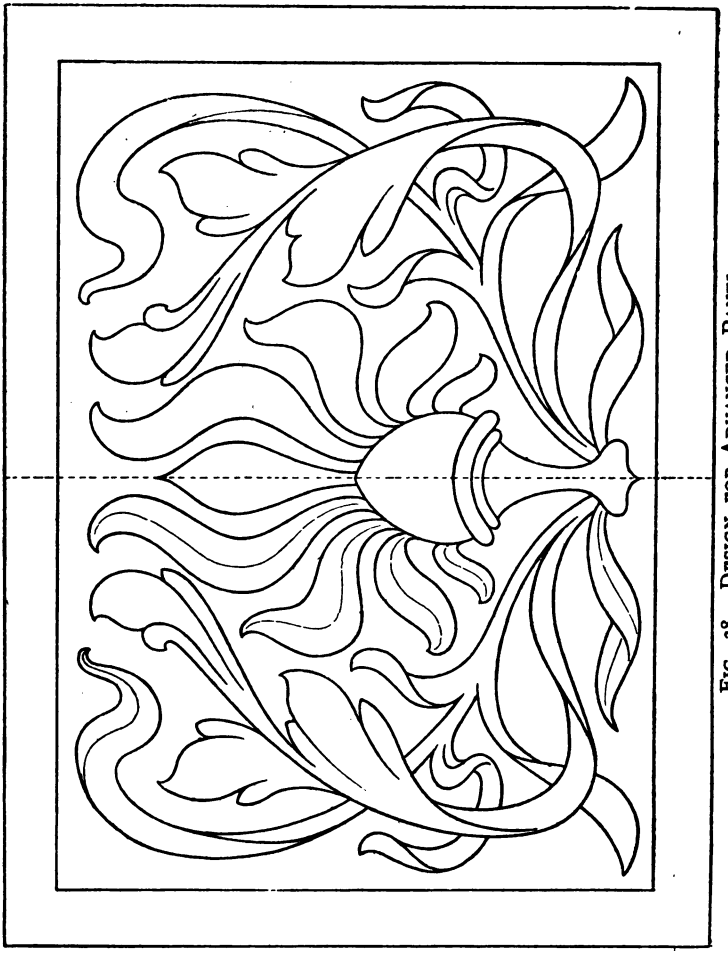

FIG. 38.—DESIGN FOR ADVANCED PANEL.

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member which lies underneath has its edges so cut that they are in line with one another, and also that the member lying on the top has its edges clean and untouched by the tools when modelling the lower member.

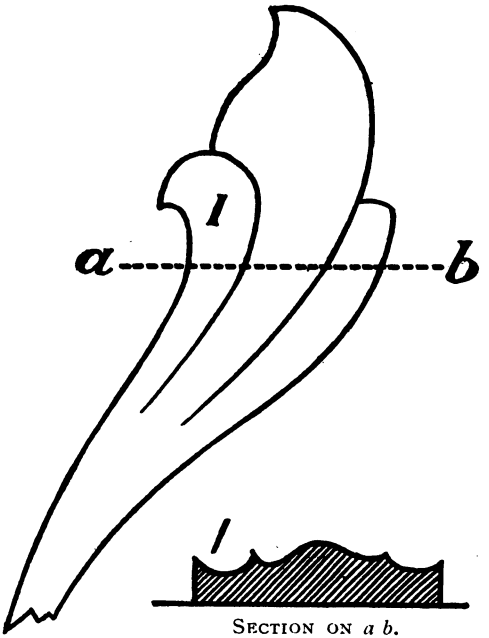

FIG. 39.—PART OF FIG. 38.

Any further information with regard to modelling and treatment of details can be gained by referring to the photograph.

A point not previously dwelt upon, although mentioned in Chapter II, is the desirability of turning

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the work round from time to time to allow of the curves being more conveniently worked. This may involve some little extra trouble where the

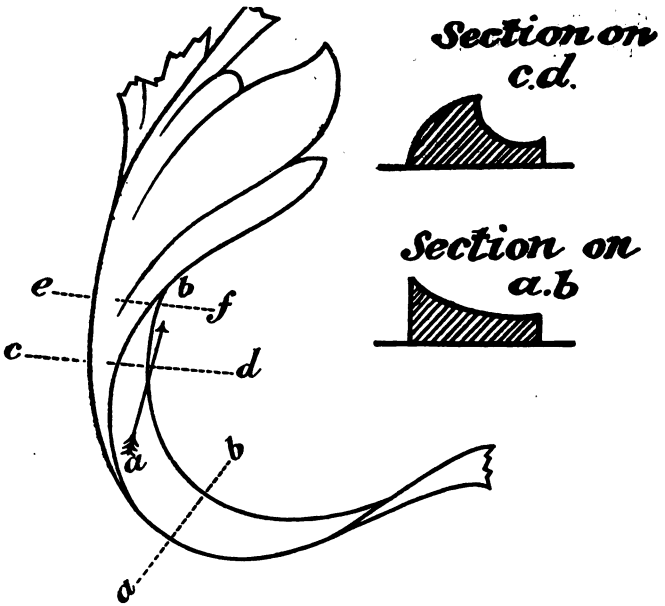

FIG. 40.—TWISTED LEAF FROM FIG. 38, WITH SECTIONS.

work is not held by a bench screw, but the student will soon realise the benefit resulting from the change of position.

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FIG. 41.—PANEL CARVED FROM DESIGN FOR LESSON V.

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CHAPTER XI.

"Incised Carving."

It may be taken as a general rule that stool tops and tables should not be carved—at any rate, in a lavish manner, because of the purpose for which they exist; yet it does sometimes occur that a table is to be used for a purpose which will not necessitate the use of the whole of the surface of the top. Similarly with stools—they may be required merely to hold a plant, in which case we may call them, strictly speaking, plant stands; or to hold an ornament, or used for some other similar purpose.

In such a case it would not be wrong to ornament the whole or a part of such surface that is left exposed; and although we might fill such space with carving that has a definite groundwork, yet it would be in better taste, and in greater accord with the principle of fitness, if we used some form of carving that did not necessitate the use of a ground.

Such a form we get in "Incised Carving." It consists in outlining the design, using the V-tool for the long curves, and the flat tools and those gouges which fit the curves of the design where the V-tool cannot easily be used. In the latter event the cut is made V-shaped to form a continuation of the V cut. Then the design is modelled between the limits of the outline so formed.

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The designs for this lesson are for a hexagonal table about 30 ins. across, having a border and a centre ornament. The work can be commenced by cutting the longer curves with the V-tool and "setting-in"

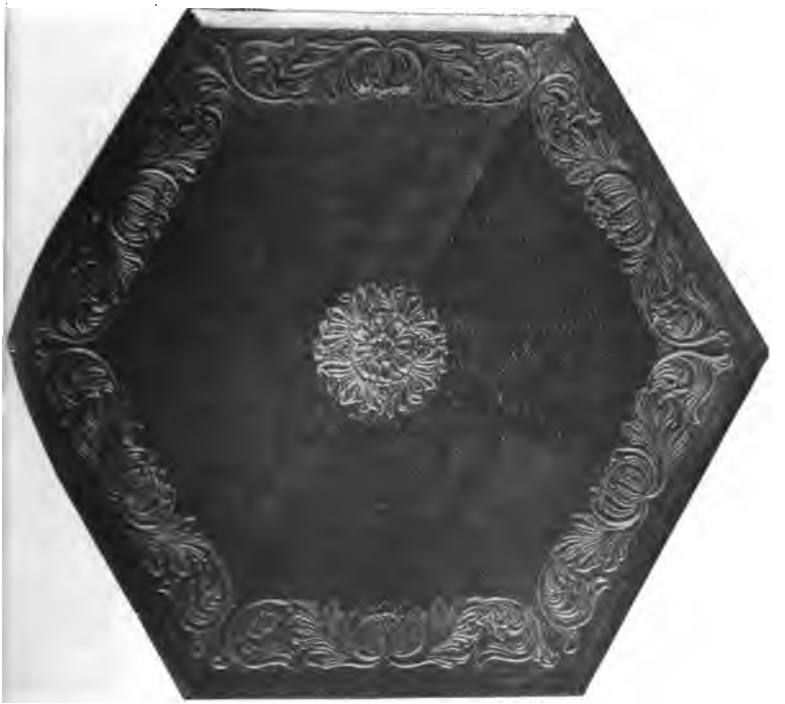

FIG. 42.—INCISED TABLE TOP.

the shorter curves as already mentioned; or it can be "set-in" entirely without the use of the V. It is better to use the V-tool wherever possible, as it makes it possible to get a freer and more continuous

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curve, and, moreover, saves time, which is an important consideration.

In this exercise the outlining is done quite *on* the pencil lines, and not about $\frac{1}{8}$ in. outside them as hitherto. The depth of this cut need not exceed $\frac{1}{8}$ in., and it is not necessary to go even to that depth to get the effect we desire.

Very great care is necessary to get the *outside* edge of the cuts continuous and clear; and to get all angles clean and sharp. Exercise the greatest care in fitting the proper tool to the design, so that each cut is coincident with the curve.

Take care, too, that the incised cut is of an *uniform width*, especially when the cut is proceeding towards an acute angle. Remember in working this exercise that every slip will show—that is, with regard to the outline; hold the tools firmly, especially giving attention to the control exercised by the left hand. After all the outline has been cut in, proceed with the modelling as in previous exercises. The modelling is in no way different to modelling with a ground, care only being taken not to let the tool slip or cut into the outline.

Incised work is a very good test of the progress made in controlling the tools: they should cut steadily and truly all the wood required to be taken off, and no more; and those students who have had plenty of practice with the V-tool will now appreciate the value of it.

It will be noticed that in carving the flower which occupies the centre of the border shown in Fig. 43 three different levels are necessary—one for

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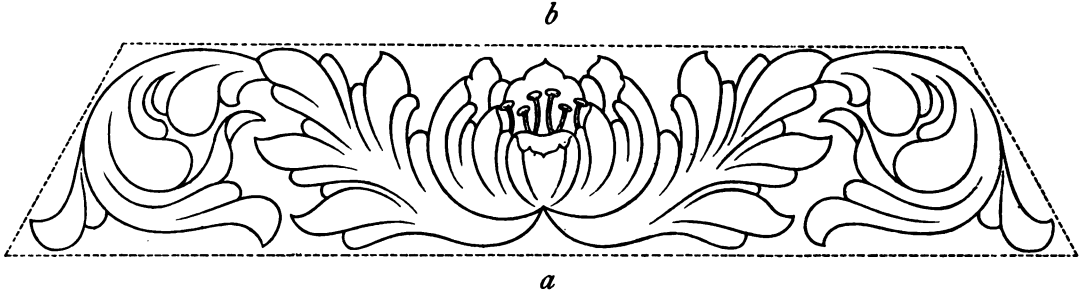

A, Section of Centre Flower. *B*, Alternative Treatment of Flower.

Fig. 43.—Border Design, with Sections from *a* to *b*.

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the inside of the petals furthest away from the eye, one for the stamens, and one for the front petals; and, by the way, as these front petals are twisted over upon themselves, we might say there are four levels. It might be thought that these four levels cannot easily and effectively be shown

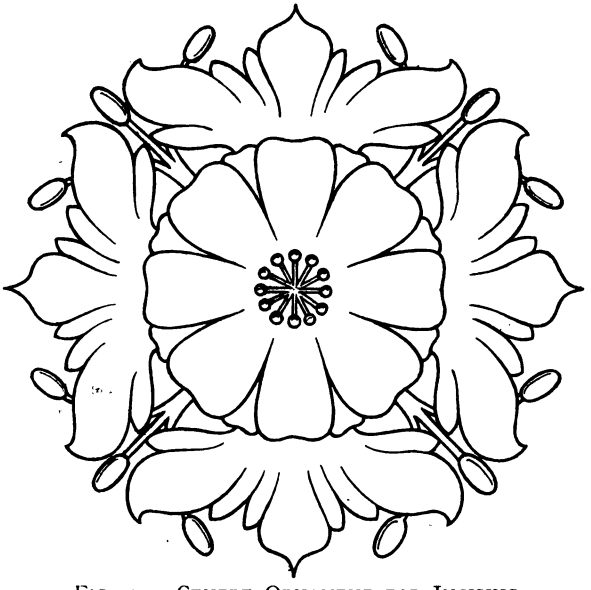

FIG. 44.—CENTRE ORNAMENT FOR INCISING.

when we have only $\frac{1}{8}$ in. to play upon. There are, however, two ways of getting over the difficulty. One is shown in section A. Instead of keeping the various portions level upon the whole of their extent, they are dipped close to the beginning of the next

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level. In this way sufficient distinction is made to enable a definite shadow to be thrown.

The second way is shown by section B. This allows for the sinking of the lowest level, that of the back petals, to a much greater depth than

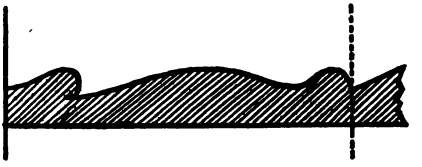

FIG. 45.—SECTION ON LENGTH OF PETAL.

$\frac{1}{8}$ in.; very deep shadows can be obtained by so doing, and, used with judgment, very good effects can be obtained.

The centre ornament of the table top, Fig. 44, is treated in a similar manner to the border The modelling of this and the border is carried out upon similar lines to previous exercises; leaves being parted

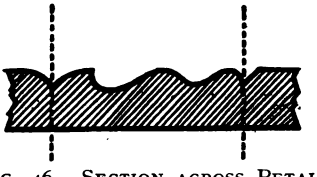

FIG. 46.—SECTION ACROSS PETAL.

from one another with the V-tool, the surfaces treated with the gouges so that ridges are formed from the junctions, and the centre of the leaves left full and round, and the backs of those leaves which are folded also rounded.

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There is a slight difference made because of the requirements of variety and contrast in the shape of the petals of the centre flower. They are treated in a flat manner, with a slight fulness in the middle (see Figs. 45 and 46, which show sections of the length and width of the petals).

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CHAPTER XI.

A "TEST" PANEL.

MOST of the difficulties which are likely to be encountered by the beginner have now been mentioned and explained, and the student should be ready for a more difficult piece of work. This is provided by the panel, the design for which is given in Fig. 47.

One or two new elements are introduced, the principal being the dragon in the centre. The winged dragon is really the chief object of interest in the panel, the other elements merely constituting a "setting" for it, consequently it should receive a special amount of care and attention.

It will be noticed that the groundwork is not punched, and that it has no margin, but the ground is taken quite to the edge of the panel. This latter fact gives a greater relief than if the margin were left on, and enhances the effect. In working the panel, proceed as in previous examples. Trace the design from centre or margin lines (centre lines preferred) to ensure it being on the wood true and square, then run the V-tool round the elements to relieve the pressure of the surrounding wood, then "set in," and proceed to take out the ground. The ground should be sunk to a depth of not more than 5-16ths in.; $\frac{1}{4}$ in. is sufficient, although beginners might naturally imagine that a design containing an element of the nature of the dragon, with

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FIG. 47.—DESIGN FOR ADVANCED PANEL.

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its wide body and various prominent peculiarities, should stand quite a long way off the ground.

The size of the panel is 30 ins. by 12 ins., and should be $\frac{5}{8}$ in. or $\frac{3}{4}$ in. in thickness. Gauge the depth ($\frac{1}{4}$in.) around the edge of the board and proceed to ground out as already described, getting the ground uniformly level and as smooth as possible.

Take care that in the grounding, or rather in the preliminary "wasting away" of the wood, the quick gouge is not taken too deeply, or the cuts will show afterward. Make all cuts meet each other, and *always cut with the grain* where possible.

Let the tools be perfectly sharp, so that they can have a chance to show what they *can* do; don't be afraid to use the strop from time to time, and whenever a tool shows the least sign of dulness, or has the smallest "gap" in it, attend to it at once.

All cuts, especially the finishing cuts, should be clean, smooth, and crisp. In modelling this design, it may be as well for the student to turn to Chapter VI and read again the remarks given there on the necessity for a due arrangement of mass, how some parts of lesser importance should be subordinated to others which are more important; some parts should be sunk to the ground, or thereabouts, whilst others should be kept raised the full height.

In this design the stalks can be kept low, swelling out in height as they swell out in width; the flower and the scroll at the right-hand end, the flower with the berries or seeds, and the large leaf on the left end of the panel may be left full height; the other members lowered to whatever depth may

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FIG. 48.—PHOTOGRAPH OF FINISHED PANEL.

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seem best to the student, always keeping in mind the unity and harmony of the whole design. The photograph of the finished panel in Fig. 48 gives a good idea of the relief of the various parts.

All cuts should have a definite relationship to the *curve* of the member, or group of members, so that it emphasizes the curve. A careless cut here and there can very easily entirely alter the character of the member; and often one member can spoil the effect of the whole carving.

Notice in this panel (Fig. 48) how the ridges enable the eye to follow the curve; how the toolmarks even act in a similar manner; how they all lead the eye in the direction the designer intended they should lead it; how, beginning at the sources of the elements, the eye is easily carried to the most ultimate point of each leaf and flower; and how *vice versa*, beginning at the points or endings of the members, the eye is carried easily and obviously to the source of them all, without break, without distraction, and therefore without annoyance. It is being able to do this that gives pleasure, that makes one feel that all the possibilities of the design have been realised, that the carver's powers of execution have been equal to his powers of conception.

In carving the berries, give special attention to the *outline* of the berries and the crevices between them.

With regard to the dragon, the photograph shows the method of treatment. It is, of course, quite an imaginative creation. No "dragon" as depicted in this design was ever in existence; but although

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imaginative in its present form, it is really based upon a combination of natural animal forms.

It possesses a head that might be a development of *either* an eagle or a lion : eagle's wings, no feet or legs, and a fish's tail. The body is scaled, the scales extending each in the form of an entire ring around the neck and body. An alternative method of treating the body with smaller scales is shown in Fig. 49, as also an alternative treatment of the wings. It will

FIG. 49.—PORTION OF FIG. 47, SHOWING ALTERNATIVE TREATMENT OF SCALES.

be observed that the artificial leaf, which has been a feature of the designs used in this series enters largely into the composition of the dragon. Its breast is covered with these leaves springing from a line that is coincident with the outline of the bird ; they form its beard, also its ears, and their influence is observable in the treatment of the tail, and in Fig. 49 the wings are composed of leaves instead of feathers

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as in the photograph of the finished panel. With reference to the wings, it will be observed that naturalness, grace, and lightness should characterise both their conception and treatment. Avoid making them too "wooden" and stiff. Keep the feathers more or less in regular order, disposing them somewhat after the natural manner.

If it be desired to use the panel in a position that is a good distance from the eye, then the depth could be increased so that the consideration of mass, which is essential in such a case, shall receive the proper emphasis. In this event, the principal attention should be given to the proportion of the masses, rather than to detail; in fact, too much attention to detail would be quite unnecessary, and would simply be labour thrown away. At a distance all that is perceived of the design is mass and curve. Get the masses in proper proportion, so that a good balance exists between all parts, and pay attention to the cutting of the curves, and the design will be a success.

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CHAPTER XIII.

Tool Sharpening.

Good work, clean and sharp in outline, and crisp in surface treatment, can only be produced by the proper combination of ability with sharp tools.

Tools as they come from the makers are, as a rule, not ground, so the edges must first be ground straight across, when they will be found to be very thick; they must then be ground down now to a fine edge, quite evenly, so that neither the corners, nor the centre dip. Each tool, it will be noticed, has a "face" side—that is, the one which is polished, the back generally being left dull, and, in grinding, both sides, where practicable, may be laid on the grindstone; but much more steel is ground off the back than the face of the tool. Grind a portion of the steel off each side of the tool until the edge is *barely visible*; let this edge be very thin indeed; but do not let the two ground surfaces quite meet. The length of the ground surface should be, as a rule, about $\frac{3}{8}$ in. on the back and considerably less on the face, it often being sufficient to rub the face side on the oil-stone. If too long a bevel be made, the strength of the tool is reduced. In grinding straight tools no great difficulty is found; but curved tools require more careful treatment. The best way is to gently rock them from side to side until the edge reaches the degree of thinness required. Always turn the grind-stone away from the tool—not towards it—and use

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plenty of water. After grinding, the flat tools should be held upon the stone at an angle just a little greater than that of the ground surface and rubbed backwards and forwards until the two surfaces meet each other, taking especial care to preserve the same angle the whole of the way. This will bring the tool to a cutting edge.

The gouges, of course, can have their outside or back surface worked on the stone; and there are two methods of doing this: one is to hold the tool at right-angles to the stone, and gently rock it from corner to corner the full length of the stone; the second is to hold it like the flat tools and rock it rapidly from corner to corner, as it is at the same time pushed backwards and forwards. Care must be taken to wear the edge evenly, so that it is still straight across when this process has been gone through. For the inside of the gouge, take the slip whose curved edge most nearly fits its curve, and, holding it at an angle, rub it backwards and forwards, taking care to rub equally on the corners as on the centre. With the V-tool care must be taken to keep the point sharp and clean.

After working on the oilstone we shall often find that along the edge of each tool there is what is called the "feather edge"; and the use of the strop is here called in to take this off. Draw the tool rapidly along the strop several times on one side, then on the other, and the edge will be found to have disappeared, and the tool is quite ready for use. If properly sharpened the tool will make in the softest wood a cut which leaves a smooth, clean surface, quite free from roughness and scratches.

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CHAPTER XIV.

POLISHING, ETC.

WHEN the ordinary amateur has finished his carving, the question of polishing it arises. There are quite a number of methods within the ability of anyone who is not an expert polisher.

If American walnut has been used, it looks well if the plain parts, such as framing, mouldings, and margins, are french polished, and the carved portions left quite dull: either covered with just one coat of polish, put on with the brush, or left the natural colour of the wood, it being understood that *carving should not as a rule be highly polished.*

Oiling the whole work with raw linseed oil makes a very good finish, and, if followed up with vigorous rubbing at regular intervals, a good dull polished surface can be obtained that is pleasing, natural, and in good taste, and that shows the grain of the wood to great advantage. The process simply consists in covering the work, either with a rag or a camel-hair brush, with raw linseed oil, letting it stand for two or three hours, and then wiping off with a clean rag. This process repeated, say, half-a-dozen times, and followed by the vigorous rubbing referred to, will produce an exceedingly good surface. If it be required of the oil that it shall dry quickly, it is an advantage to put one part turps to three parts oil.

Another way to finish walnut is to oil, dry, and rub, and then give one coat brush polish; sandpaper

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with fine paper; then rub with the familiar bee's-wax and turpentine or "Ronuk."

The same plan can be adopted if the wood be oak, especially if it be required to have it light in colour. If it be required to have it very light, it may be waxed without previously oiling it, which latter slightly darkens it. But many people like the oak to be darkened to a greater or less extent. The best way to accomplish this is to fumigate it by means of liquid ammonia. Different kinds of oak take the fumes in a different manner. Red oak, for instance, will scarcely take the fumes at all. Wainscot oak from the Baltic ports, or from Odessa, will take the fuming the most evenly.

After the desired shade is obtained, the work may be oiled with raw linseed oil, and then waxed, or it may be waxed without oiling. The latter process slightly darkens the wood, so this should be borne in mind in deciding whether the colour produced by the ammonia fumes is quite the right shade required.

Oak may also be stained to any shade required. Stephens' stains are very suitable for this purpose, only requiring diluting with water if too strong.

After the stain is applied, it should be allowed to dry. Then the work may be oiled and waxed as before.

Satin walnut, if waxed only, retains its natural colour. It may also be oiled and then waxed, giving it a yellowish brown tint, slightly darker than its natural colour. It may be also coated with white polish; the application of two coats is sufficient to keep it clean, and at the same time gives only a dull

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finish. It may also be french polished, keeping well in mind advice already tendered that the carved work itself should not be bright. Satin walnut can also be stained to imitate oak or American walnut, and then oiled and waxed, or french polished.

These remarks on the finishing of satin walnut can also be applied to kauri pine and canary wood. White woods, such as sycamore, chestnut, and holly, may be stained according to the taste of the student —green, black, brown, etc., then given two coats polish.

An excellent polish for carved work is made by first dissolving shredded bee's-wax in spirits of turpentine, then mixing the emulsion so made with equal quantities of boiled oil and turpentine.

In the course now brought to a close, it has been intended to take the beginner from the commencement of the art of woodcarving to a point when he or she will be able to grapple with the greater difficulties of more advanced work unaided, with more or less success. By always taking advantage of opportunities of inspecting, and, if possible, of taking sketches and particulars of good work, the student should be able, to some extent, to undertake the execution of fairly difficult pieces of carving. What is most required is practice—constant conscientious practice, having regard, not to the quantity of work done, but to the *quality*.

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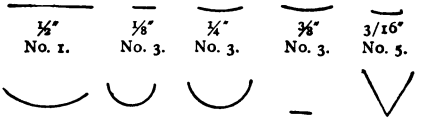

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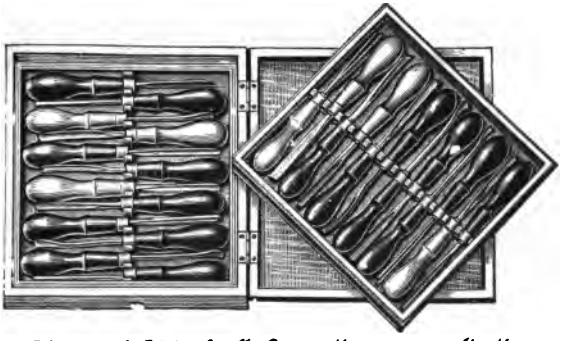

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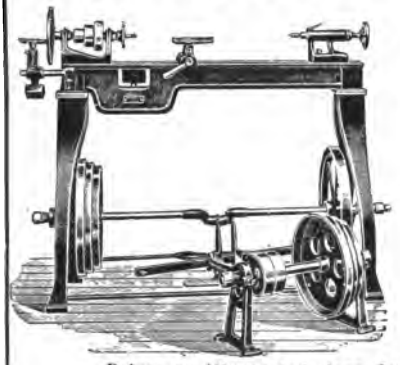

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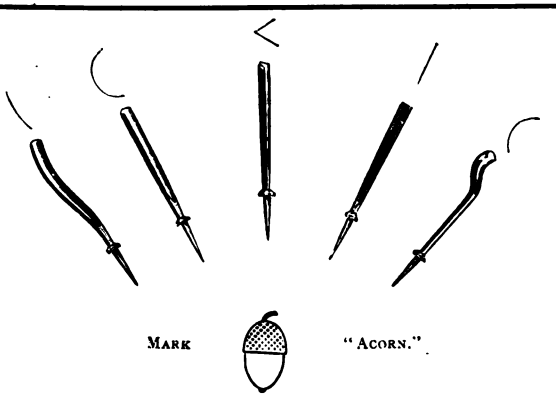

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